

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application:

LISTING OF CLAIMS:

Claims 1-12 (Cancelled).

13. (Currently Amended) A method for manufacturing an area array package comprising:

coupling a grid array of primary electrical contacts to a coupling surface of a substrate within a central portion defined by the substrate, the grid array of primary electrical contacts configured to carry at least data signals between the area array package and a circuit board;

forming the primary electrical contacts of the grid array as a plurality of primary solder balls, each primary solder ball of the grid array defining a first diameter;

coupling a series of secondary electrical contacts to the coupling surface of the substrate within a peripheral area defined by the coupling surface, the series of secondary electrical contacts configured to carry power signals between the area array package and the circuit board, the series of secondary electrical contacts separate from the grid array; and

forming the series of secondary electrical contacts as a plurality of secondary solder balls, each secondary solder ball of the series defining a second diameter, the second diameter defined by each of the secondary solder balls being greater than the first diameter defined by each of the primary solder balls;

wherein coupling the series of secondary electrical contacts comprises coupling the series of secondary electrical contacts to the coupling surface of the substrate, the coupling surface configured to oppose a mounting surface of the

circuit board, the substrate having at least one power plane, at least one ground plane, at least one plated through hole in communication with the at least one power plane, and at least one plated through hole in communication with the ground plane;

the substrate having a contact pad in electrical communication with the at least one plated through hole in communication with the at least one power plane and electrically coupled with a secondary solder ball of the series of secondary electrical contacts;

the substrate having a contact pad in electrical communication with the at least one plated through hole in communication with the at least one ground plane and electrically coupled with a secondary solder ball of the series of secondary electrical contacts;

the secondary solder ball, contact pad, and the at least one plated through hole in communication with the at least one power plane configured to carry power to the at least one power plane through the coupling surface; and

the secondary solder ball, contact pad, and the at least one plated through hole in communication with the at least one ground plane configured to carry power from the at least one ground plane through the coupling surface;

further comprising:

forming the substrate having a length that is greater than 45 mm and having a width that is greater than 45 mm;

coupling the grid array of primary electrical contacts to the coupling surface of the substrate comprises coupling the grid array of primary electrical contacts to the coupling surface of the substrate in an array pattern of 50 columns having 50 primary electrical contacts per column within the central portion defined by the substrate, the grid array of primary electrical contacts configured to carry data signals between the area array package and a circuit board; and

coupling the series of secondary electrical contacts to the coupling surface of the substrate comprises coupling the series of secondary electrical contacts to

the coupling surface of the substrate within the peripheral area defined by the coupling surface, the series of secondary electrical contacts configured to carry power signals between the area array package and the circuit board, the series of secondary electrical contacts being separate from the grid array of primary electrical contacts and a sum of the primary electrical contacts and the secondary electrical contacts being greater than 2500 electrical contacts.

Claim 14 (Cancelled).

15. (Previously Presented) The method of claim 13 wherein the step of forming the series of secondary electrical contacts comprises:

placing at least two solder balls on a contact pad oriented within the peripheral area defined by the coupling surface, each solder ball defining a first diameter;

heating the at least two solder balls to cause the solder to undergo reflow;  
forming a secondary solder ball on the contact pad, secondary solder ball defining a second diameter, the second diameter defined by the secondary solder ball being greater than the first diameter defined by each of the primary solder balls.

16. (Original) The method of claim 13 comprising coupling at least one power regulation device to the substrate and in electrical communication with the series of secondary electrical contacts.

17. (Previously Presented) The method of claim 13 comprising coupling the plurality of secondary solder balls to the substrate at a pitch of at least approximately 5 mm.

18. (Previously Presented) The method of claim 13 wherein the substrate defines a length of at least approximately 60 mm and a width of at least approximately 60 mm.

Claim 19 (Cancelled).

20. (Previously Presented) The method of claim 13 wherein the grid array of primary solder balls is configured in an array pattern of 50 columns having 50 primary solder balls per column.

Claims 21 - 28 (Cancelled).

29. (Previously Presented) The method of claim 13 further comprising surface mounting a die to a second surface of the substrate, the second surface of the substrate opposing the coupling surface of the substrate, to electrically couple the die with the first set of contact pads and the second set of contact pads wherein the die is configured to exchange, through second surface of the substrate, at least data signals with the circuit board through the grid array of primary electrical contacts and wherein the die is configured to exchange, through second surface of the substrate, power signals with the circuit board via the at least one secondary solder ball, the at least one contact pad, and the at least one plated through hole.

Claim 30 (Cancelled).

31. (Currently Amended) The method of claim [[30] 13, wherein coupling the grid array of primary electrical contacts to the coupling surface of the substrate within the central portion defined by the substrate, the grid array of primary electrical contacts configured to carry at least data signals between the area array package and the circuit board comprises coupling the grid array of primary

electrical contacts to the coupling surface of the substrate within the central portion defined by the substrate, the grid array of primary electrical contacts configured to carry data signals and power signals between the area array package and the circuit board.

32. (Currently Amended) The method of claim ~~[[30]]~~ 13, wherein forming the substrate having the length that is greater than 45 mm and having the width that is greater than 45 mm comprises forming the substrate having a length that is substantially equal to 60 mm and having a width that is substantially equal to 60 mm.

Claim 33 (Cancelled).

34. (New) The method of claim 13, comprising:

providing the substrate having the coupling surface, the coupling surface configured to oppose the mounting surface of the circuit board and the coupling surface being curved relative to the mounting surface of the circuit board; and

sizing the second diameter defined by the solder balls of the plurality of the secondary solder balls relative to the first diameter of the primary solder balls to configure the secondary solder balls to absorb a greater amount of weight of the area array package, caused by curvature of the coupling surface of the substrate, than the primary solder balls.